50

846 789 782 Now that the fire was going nicely and Dûan was "ready to warm her body," the all-important prayer and incantation "to control the hotness and poison" of the fire had to be pronounced lest the mother's body be "swollen or burned." Sâi took raw rice, salt, and alcoholic liquor[36] in her mouth, chewed them, and sprayed them over the fire and over Dûan's body three times, saying "Spirit of the Fire and Wind, may both mother and baby be cool and happy!" and murmuring her secret formula with ancient Pali words about "great fire" and "death."[37] With the shoulder cloth (sabaichiang) that she always wore to the temple draped diagonally over her left shoulder and under her right arm, Dûan knelt and faced the fire. Praying for happiness to the Mothers of the Fire, Fire-floor, and Wind, and finally to the Lord Buddha, the Holy Brotherhood of Priests, and the Sacred Law, she bowed, hands clasped, and touched the floor three times with her forehead. Then she rose and lay down on the plank with the holy fire on her right side.

846 [757] [853] As Dûan was resting quietly, Sâi made three "taping fruits" (lûk prakhop), balls of tamarind leaves, phlai, and salt wrapped in cloth. One was put well up between Dûan's legs to cure the birth wound (phlêe). The other two were set aside for use on subsequent days. Sâi painted the baby's tongue with alcoholic medicine, and from her fingers dropped a little honey and boiled water into his mouth. Then she laid him on his tray on the floor close by Dûan, on the side away from the fire.

787 827 With satisfaction of a job well done, Sâi and Lek sat together for a quiet chew of betel. "Lek," said Sâi, "has it occurred to you on what a good day this boy has been born? It is a Saturday, so he will have power. Nothing, nobody, can hurt him! Once I delivered a boy on that best

---

[273] [262] 36. Alcohol was heating; rice, strengthening. Salt appears to be drying.

[263] [776] 37. The deities addressed were mâe phra phlêng and mâe phra phai. Another Pali-Thai magic formula to control fire was: "Phra Môk Khan Lê Nô will extinguish the fire from hell, na mô phut thâ ya." Phra Mogdallana, one of the two most faithful disciples of Buddha, caused the fires of hell to go out (cf. Anuman Rajadhon 1961:137). The na mô...etc. was a traditional phrase to prevent spiritual dangers and is a repetition of the names of the Buddha in five incarnations, past and future (cf. Texter 1960:483-485).

Killing
fish was apparently regarded more lightly by many Buddhists than killing of larger animals, but fishing on (1)wan (4)phra, the weekly holy day, was forbidden. Fish were caught from the canal with nets, traps, spears and hooks. Some were trapped in trenches in the rice fields. Techniques varied with the varieties of fish mature and plentiful at different seasons.[1] Moreover, every house had a fish pond. It was usually the hole from which earth had been removed for mounding the house site, and was connected by a ditch to the canal. Fish were lured from the canal into the pond by clearing it of injurious undergrowth, planting appropriate fish-feeding plants, of

---

Smaller fish were preserved as fermented fish. The fish with bones left in, were salted overnight. This product was called (1)plaa (1)raa. For fermented fish to be used as seasoning, in various dishes, the liquid was drained off, then the fish were washed and mixed with salt and specially prepared rice. This had been soaked overnight, fried and pounded. The mixture was allowed to ferment in a small jar for from 2 weeks to 2 or 3 months, depending on the product desired. Large bones were removed by putting the product through a colander before use. Fermented fish had the advantage that it could be eaten without further preparation, and the flavor was generally liked.

Small shrimp, which were caught in quantity during only about 3 weeks in February, were made into shrimp paste as follows: the shrimp were washed, mixed with salt and allowed to stand overnight. The liquid was drained off, and the shrimp were spread out on trays and exposed to the sun for a day or so. Larger ones might then be beaten to loosen the shells, which could be winnowed away. For very small shrimp, this step was omitted. The shrimp were then pounded thoroughly in a mortar, and stored in a jar for about a month before use. Very small fish were sometimes made into fish paste in the same way. The yield was about 2 kg. of the tannish or grayish colored shrimp paste from 4 baskets (4/5 tang) of shrimp. Shrimp paste or (2)ka-(2)pi was an essential ingredient of Thai hot dishes.

The liquid which was drained off from the mixture of fish or shrimp and salt in the first stage of preparing fermented fish or shrimp paste was used by some villagers to prepare (4)nam (1)plaa or fishsoy. The liquid was boiled with certain green leaves such as mango leaves, onion, garlic and salt for from 30 minutes to an hour, then it was strained. The resulting red-brown liquid was bottled and was ready for use as a condiment.

1. Sharp et al. (1953, pp. 185-196) described some common fishing techniques and listed 32 varieties of fish known to be found in Bang Chan in 1948-49.

listed on 10 or more of the 24-hour dietary records obtained. For items which were major ingredients, the number of records on which the item appeared, is given.[1] Thus (1)plaa (1)thuu, which is bought by residents of Bang Chan during the busy work seasons, was used more often than any other single variety of fish named. Of the varieties caught locally, climbing perch, serpentheed, and silurus were most commonly used. Fermented fish, not included in the calendar, appeared on 53 records, and fish with kind not specified, on 160. Eggs were used more often than any animal food other than fish. Among green vegetables, swamp cabbage and (2)phag (2)ka-(2)cheed were commonly used. Bamboo shoots and lotus stalks were prominent among the non-leafy vegetables. Bananas which are grown in every garden and are available all year round were much the most common fruit, although other seasonal fruits were eaten more often in 6 of the 9 months in which school children submitted records.

Some idea may be obtained of peak seasons for use of various common foods by noting the months designed by X. Thus in January and May, serpentheads were listed on about 1/3 of the records, and were frequently served at more than one meal. Sweet potato, usually fried and eaten as a snack, was listed on 35 of 52 records obtained from school children in September. Flowers of the West India pea tree were listed on 10 of 55 records in October, and 12 of 88 in November, with occasional mention on records obtained in 4 other months.

Fruits were eaten much less often than one might expect in a tropical area where many varieties are available and fruit can be grown the year round. They were most often eaten by children as snacks, although pineapple and papaya were usually, and banana occasionally cooked in "with-rice" dishes such as curry. In September, fruit was included in the diets of less than 1/3 of the children. An average of more than one serving of fruit per child per day was recorded in 5 months only, May, June, October, November and February. In May, when (4)ma-(1)faj or rambai was in season 46 of 76 children reported having eaten it. Pineapple, listed by 35 of 61 children in June, was most often served in curry at one or more of the family meals. In October, oranges were eaten by 30 of 55 children who submitted records. Bananas (mostly of the (4)nam-(4)waa variety) topped the list in November and February.

Items mentioned on fewer than 10 records, and hence arbitrarily omitted from the chart, are worth noting as they

---

1. No figures are given for sweet basil, garlic, onions, chili or limes, which were so often used in small amounts as seasoning that the count obtained would give no clear idea of the extent of their use. Some common spice plants were not mentioned on the records.

Average intakes of riboflavin were estimated to be about a third, or less, of the allowances. Estimates of calcium intake were, on the average, only 20% of the allowance for Group A, and 30% of that for Group B. Although the calcium allowances were thought to be conservative, estimated requirements based on calcium balance experiments are believed by some investigators to reflect usual intake rather than need, and the extent to which man may adapt to a low calcium diet is still undetermined. Among residents of Bang Chan, no evidence was noted other than short stature and small bones, which might suggest a calcium deficiency.

The vitamin A value of diets of both Groups A and B appeared to be low. Clinical signs possibly associated with vitamin A deficiency, i.e. xerosis and phrynoderma, occurred among residents of Bang Chan (Hauck, 1956), and as would be expected from the method of selection of the two groups, such skin signs were more prominent among members of Group A than Group B. On this basis one would expect the vitamin A intake of Group A to be less than that of Group B, whereas the reverse appeared to be the case on the survey days; but the higher estimated vitamin A value for the diets of Group A than Group B may not represent a real and consistent difference. The yellow (2)sa-(5)noo flowers, for which no nutrient values were found, were used rather liberally by some families in Group B at one season and may have contributed vitamin A value. Moreover, owing to unavoidable changes in the plan for alternating visits to the two groups of families, those in Group B were visited more often when the level of water in the canals was low and the leafy water plants were not available. The unusual intake of a large amount of yellow sweet potato by one family in Group A on one survey day may also have tended to distort the picture. Families in Group A, however, used substantial amounts of sweet basil leaves, whereas in Group B, this herb was used for seasoning only.

The estimated amount of thiamine available per capita, before cooking, was 73% of the estimated allowance for Group A and 79% for Group B. Since over four-fifths of the thiamine content of the foods used by each group came from rice, and the thiamine loss when rice is cooked as it was in Bang Chan has been estimated as 75% or more (Tuangraksatve and Srisukh, 1955) the actual per capita intake of thiamine must have been below the value of 0.23 mg. per 1000 calories which the Food and Nutrition Board, National Research Council (1953) considered to be the minimal requirement for adults. According to Nicholls (1951, p. 87), a ratio of Thiamine: Non-fat Calories of 0.3 - 0.35 is borderline and too low, and ratios below 0.3 are associated with beriberi-producing diets. That the diets of some of these people, as eaten, were in fact dangerously low in thiamine, is attested by the occurrence of beriberi and history of beriberi among them. Of the 15 persons, 20 years of age or older in Group A, 7 had knee jerk

[246] Eggs were eaten occasionally; pork and beef were bought in-
252 frequently and in small amounts by some families. One family only, ate chicken; other meats eaten on survey days included buffalo, frogs, eels and field rats.

Vegetables. - More than three quarters of the estimated vitamin A value of these diets was provided by green and leafy vegetables, although the pale yellow sweet potatoes, eaten in quantity by one family in Group A increased the vitamin A from other vegetables substantially. The greater use of swamp cabbage, a wild aquatic plant by families in Group A, may be explained by the fact that more visits to this group occurred when the water level in the canals was relatively high. Families in Group B, however, used a greater variety [263] of greens, especially leaves from a number of trees. For families in Group A, sweet basil contributed substantially to the vitamin A and riboflavin content of the diets, whereas families in Group B used this herb in trivial amounts for flavoring. No nutrient values were found for lemongrass, which was used regularly in substantial amounts for flavoring. Persons in Group B got a greater percentage of their calcium and iron from green than from other vegetables, whereas those in Group A obtained as much or more of these nutrients from other vegetables.

Nearly 3/5 of the ascorbic acid intake of Group A was provided by other vegetables as compared to 1/4 from green vegetables, whereas Group B obtained about equal amounts of ascorbic acid from green and other vegetables. Egg plants[1], calabash and white radish were most commonly used in quantity. Onion, garlic and dried chilies were used daily, but in smaller amounts. With the exception of one family which ate a large amount of sweet potato on one survey day, consumption of tubers, i.e. sweet potato and taro, was small and usually in the form of snacks eaten by children. Legumes were seldom eaten in Bang Chan. Two families had bean sprouts on survey days, and children occasionally ate mung beans and peanuts as snacks.

Fruit. - Although technically a fruit, the coconut does not resemble fruits as a group in its contributions to the diet, hence coconut and other fruits are treated here as two sub-groups. Coconut meat, and its products, coconut milk and coconut cream (Appendix C, p.128), were used almost daily in the participating households. These coconut products contributed about 1/5 of the total fat of the diet, for Group A,

---

[244] 1. Many varieties of eggplant are grown in Thailand.
252 Three were used on survey days: the pea-size variety which was frequently put in hot curry, a round type which was served raw with chili sauce and a long variety which was either panned with a small amount of fat or used in curry.

more than fats and oils as such.

Bananas were grown by all families that participated in the study, but were eaten only occasionally, primarily as snacks. Tamarind and lime were used often in small amounts in making sour curry and chili sauce, and bergamot rind was used for seasoning. Papaya and mango, both of which are good sources of vitamin A and C, were each eaten once only during the survey. The green papaya was used in curry. Fruits are relatively abundant in Thailand, the year round, yet fruit made minor contributions to the diets of families studied in Bang Chan.

Fats and oils. - Fats were used in small amounts to pan fish, meat, eggs and vegetables, and provided about 1/7 of the total fat in the diet of Group A, and 2/7 for Group B. Coconut oil, which was less expensive than pork fat, was more often used in Group A.

Sugar. - Palm sugar was used in small amounts in the preparation of many "with-rice" dishes, and occasionally in snacks, i.e. guava dipped in a mixture of sugar, salt, chili, mung beans cooked in palm syrup and the like. The amounts used were small, and the contribution to nutritive value was slight. By Western standards, the consumption of sugar in Bang Chan was almost negligible.

Spices. - Spices were commonly used in food preparation, particularly in hot dishes (i.e. those made with chilies) but little information on their nutritive value is available.

Alcoholic beverages. - In the families surveyed, all men except the elderly father in Household 21 drank occasionally, but most of the women did not. The husbands in Households 12 and 67 drank heavily at times. No estimate can be made of the contribution of alcoholic beverages to caloric intake in these households.

Summary of Nutrient Contributions of Foods Commonly Eaten in Two Groups of Households. - The contribution in terms of calories and nutrients of certain foods used by 25% or more of the families studied, i.e. by 3 or more of the families on at least one survey day is shown in Table 13. Items selected for inclusion in this table are those which either made significant contributions to the nutrient content of the diets of Groups A and B respectively, or were major items in terms of amounts used or frequency of use. For certain items used frequently for seasoning, information on nutritive value was too scant to warrant inclusion in this table. Figures given are for average consumption per capita per day, based on all persons in the specified groups, and all survey days. For items used by all or most families every day, such as rice, fresh fish, chili, coconut products, and sugar, the figures represent approximately the usual daily per capita consumption.

but additions of rice water, coconut milk, and salt[1] were more common from 3 to 6 months. A few infants less than 6 months old were given rice from the family pot cooked in the usual manner.[2] No other foods were introduced before 6 months of age.

A majority of infants from 6 to 8 1/2 months[3] of age were given ordinary rice, although for some, excess water was not drained off and special mashed soupy rice was still given to others. Fishsoy, (4)nam (1)plaa, might be added for both salt and flavor. Several mothers said that when the baby had teeth he could begin to eat ordinary rice. At this time also the infant was given some other items which were considered as adult food (Table 2).[4] A few were fed protein-rich foods, i.e. fresh, dried, or salted fish, egg, meat, or poultry, between the sixth and ninth months. One child in this age group was given banana other than (3)kluaj (4)nam-(4)wan (kind not specified), and four infants had fruit other than banana frequently or occasionally. Orange, mango, guava, rose-apple, and rambutan were mentioned according to seasons. Some kinds of (2)kha-(5)nom, which included purchased crackers, biscuits, or cookies as well as some sweet items which we would call desserts,[4] were given also, at least occasionally, to many babies over 6 months of age.

Among infants from 9 to 11 1/2 months of age increasing use of protein-rich foods, principally fish and egg, was noted. Fruits other than the small (4)nam-(4)wan banana and (3)kha-(5)nom were also given to more infants. A few were given vegetables before one year of age, but none had them daily (Table 3).

Diet During the Second Year of Life.

For most of these babies breast feeding was continued into the second year. By this time almost all were given ordinary rice, and more than half had fish daily with fresh fish being fed more often than dried or salted fish. A few babies between

---

1. In Thailand rice is not salted during cooking.

2. See (3)khaav (5)suaj, glossary p. 51.

3. The nearest half month marked the dividing point between age groups. Thus an infant 8 months 20 days old would be considered as 8 1/2 months old and one 8 months 23 days old would be considered as 9 months old.

4. Neither such (2)kha-(5)nom nor fruit were included in the usual family meals, but school children often bought them as snacks to eat at noon recess (Hauck et al., 1956; Hauck and Hanks, 1959).

[1] [see p. 19- Analyst] [3] [see p. 20- Analyst]

853 3 and 6 months soupy rice was a common addition to the infant's diet, and after the first teeth appeared many had rice from the family pot. Between 6 and 9 months, also, fish was given regularly to many babies and egg at least occasionally. Crackers, cookies, and various items designated as (2)kha-(5)nom were frequent additions at this age.

863 855 262 Seasonal fruit such as mango and orange was given to some infants from 6 months on, but most children had fruits other than the (4)nam-(4)waa banana infrequently even at two years of age. As the feeding of rice increased, banana was given less often, so that for the 2-year old child even banana was eaten only occasionally. A minority of babies were fed vegetables by one year of age, and some had not begun to eat them by two years. Only about half the children from 2 to 4 1/2 years old had vegetables frequently.

Avoidance of hot tastes, rather than reluctance to give vegetables, may have been responsible for late introduction of vegetables into the diet of many children. In Bang Chan vege- [252] tables were often combined with other foods, as in curries. They were usually added toward the end of the cooking time after the mixture had been seasoned. Vegetables from such a "hot dish" would not be offered to a small child unless the parents considered him old enough to eat "hot-tasting" foods. Among the mild "with-rice" dishes were vegetables panned with a small amount of fat and seasonings other than chili, as well as vegetables cooked in coconut milk or in water (Hauck et al., 1958; Hauck and Banks, 1959). In this connection the suggestion of a Thai co-worker that one might encourage eating more vegetables by discouraging the use of "hot" dishes seems promising, since a larger amount of mild than of "hot" "with-rice" food is eaten at one time. To promote more frequent, and earlier, feeding of vegetables to babies, one would need to encourage either more frequent preparation of mild "with-rice" dishes containing vegetables or special preparations of vegetables for the baby. The latter is rather impractical when foods are cooked one at a time over the same fire as in Bang Chan.

[252] [261] Perhaps one reason why most infants in Bang Chan had fish daily after 6 or 7 months of age is that in making curries fish was often cooked in a little fat or coconut milk before seasonings were added. Thus, a little fish could then be set aside for the baby before chili and other spices went into the pot. (Note, also, that rice and fish were the foods considered safe to eat 124 during (2)juu (1)faj by all mothers interviewed). Changes in 242 food preparation suggested for improvement of the family diet in general (Hauck, 1958) could automatically help to improve the feeding of young children who are gradually introduced to adult foods. At the same time, a better family diet would probably help to improve the quality and quantity of mother's milk, since during lactation mothers tended to eat as usual. In deciding whether the more effective approach would be through teaching

7: Janlekha X-4,5 (1948-1953)p956 AO7 Central Thai AO7
Bangchan

431
511 On the other hand, there are scores of items that have to be bought for daily consumption. These are:
[262] (a) Food -- fish, fish sauce, shrimp paste, meat, coconut,
[263] onions, garlic, dried chili, curry essence, limes, tamarind,
[273] palm sugar, white sugar, salt, and cookies: (b) Stimulant --
[276] dried areca, betel, lime, tobacco, tobacco binder, and
[372] liquor; (c) Clothing; (d) Medicine; (e) Soap; (f) Fuel --
[515] Kerosine, matches, charcoal, and fire wood. The list includes only standard items appearing on our check list. Actually, there are more of such items as coffee, tea, lemon-
* [128] ade, coca-cola, and pepsi-cola. Articles that are bought
[272] but do not appear on the check list for ordinary household expenses for certain technical reasons which will be discussed in the section on consumption later in this chapter are building materials, machinery, farm equipment, furniture and household utensils.

000 The Operator's Remuneration and Measures of Success

From almost the beginning of the study of farm management in the United States, much effort has been given to measuring the success of farming businesses, or of farm-family undertakings or enterprises, and then of correlating various factors with these, such as size of business, yields per acre or per animal, or work-efficiency measured perhaps as crop acres per man or per horse or per tractor, with a view to discovering some general farm management principles or rules for a farmer or farm family to follow in becoming more successful. Black, Clawson, Sayre and Wilcox give the